

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application.

Listing of Claims:

Claims 1-48. (canceled).

Claim 49 (currently amended): A piezoelectric actuator for actuating control valves or injection valves of internal combustion engines in motor vehicles, comprising a circular, cylindrical piezoelectric actuator body (1) in the form of a multilayered laminate made up of stacked layers of piezoelectric material with intervening metallic or electrically conductive, alternating first and second electrode layers (10, 11) that function as electrodes, wherein these first and second electrode layers (10, 11) alternately contact first and second electrically conductive common electrode connections (12, 13), said first and second electrode layers (10, 11) respectively include portions which are disposed only on the outer cylinder wall (4) of the actuator body (1), and at points that are angularly offset from one another, and each portion from each of the first and second electrode layers contacts the first and second electrode connections (12, 13), wherein each first electrode layer (10) has a recess (17) which encompasses and insulates the second electrode connection (13), wherein each of the

first ~~and/or~~ and second electrode ~~connection~~ connections (12, 13) constitutes a contact surface in the form of a section of a cylinder circumference extending at least 90° in the circumferential direction ~~at least a substantial extent~~, and also extending in the longitudinal direction of the actuator body (1).

Claim 50 (previously added): The piezoelectric actuator according to claim 49, wherein the points of the first and second electrode layers and the first and second electrode connections (12, 13) in contact with them, which are exposed on the outer cylinder wall (4) of the actuator body (1), are disposed diametrically opposite one another.

Claims 51 and 52 (canceled).

Claim 53 (previously added): The piezoelectric actuator according to claim 50, wherein each second electrode layer (11) has a recess (18) which encompasses and insulates the first electrode connection (12).

Claims 54-60 (canceled).

Claim 61 (currently amended): A piezoelectric actuator for actuating control valves or injection valves of internal combustion engines in motor vehicles, comprising a circular, cylindrical piezoelectric actuator body (1) in the form of a multilayered

laminate made up of stacked layers of piezoelectric material with intervening metallic or electrically conductive, alternating first and second electrode layers (10, 11) that function as electrodes, wherein these first and second electrode layers (10, 11) alternately contact first and second electrically conductive common electrode connections (12, 13), said first and second electrode layers (10, 11) respectively include portions which are disposed on the outer cylinder wall (4) of the actuator body (1) at points that are angularly offset from one another, and wherein the portions are not disposed on the opposite surface of the piezoelectric elements, and each portion from each of the first and second electrode layers contacts the first and second electrode connections (12, 13), wherein each first electrode layer (10) has a recess (17) which encompasses and insulates the second electrode connection (13), wherein each of the first and/or second electrode connection connections (12, 13) constitutes a contact surface in the form of a section of a cylinder circumference extending at least 90° in the circumferential direction ~~at least a substantial extent~~, and also extending in the longitudinal direction of the actuator body (1).

Claim 62 (previously added): The piezoelectric actuator according to claim 61, wherein the points of the first and second electrode layers and the first and second electrode connections (12, 13) in contact with them, which are exposed on the outer cylinder wall (4) of the actuator body (1), are disposed diametrically opposite one another.

Appl. No. 09/674,771
Amdt dated August 13, 2003
Reply to Office action of May 15, 2003

Claims 63 and 64 (canceled).

Claim 65 (previously added): The piezoelectric actuator according to claim 62, wherein each second electrode layer (11) has a recess (18) which encompasses and insulates the first electrode connection (12).

Claims 66-72 (canceled).

REMARKS

Claims 49, 50, 53, 61, 62 and 65 remain in the application.

Claims 49 and 61 have been amended to recite that "each of the first and second electrode connections (12, 13) constitutes a contact surface in the form of a section of a cylinder circumference extending at least 90° in the circumferential direction . . . of the actuator body (1)." Support for the amendment is clearly found in Figs. 3, 4 and 8, as originally filed.

Reconsideration of the rejection of claims 49, 50, 53, 61, 62 and 65 under 35 USC 102 as anticipated by Hatschek (US 3,281,613), Angeloff (US 3,521,090) or Maruyama et al (US 6,114,798) is respectfully requested. Claims 49 and 61 each recite that "each of the first and second electrode connections (12, 13) constitutes a contact surface in the form of a section of a cylinder circumference extending at least 90° in the circumferential direction, and also extending in the longitudinal direction of the actuator body (1)."

To support a rejection of a claim under 35 U.S.C. § 102, it must be shown that each element of the claim is found, either expressly described or under principles of inherency, in a single prior art reference. See Kalman v. Kimberly-Clark Corp., 713 F.2d 760, 772, 218 USPQ 781, 789 (Fed. Cir. 1983), cert. denied, 465 U.S. 1026 (1984).

Hatschek does not anticipate claim 49 or 61 because, as clearly shown in Figs. 2 and 3, Hatschek's first and second electrode layers 6 do not extend to the outer wall of the actuator body and, thus, lack portions which are disposed on the outer cylinder


wall of the actuator body as required by the claims. Further, the electrode connections or connection bridges 7 do not form of a section of a cylinder circumference extending at least 90° in the circumferential direction of the actuator body as required by the claims.

Angeloff teaches a piezoelectric transducer with electrically conductive mounting rods 26 serving as contact surfaces for electrode layers 12 and 14. Maruyama et al teaches two side electrodes 9, 10 formed on stacked side portions of a stack of piezoelectric ceramics 1 and serving as contact surfaces for electrode layers 2', 7' (in Figs. 1A and 1B) and 2, 3 (in Fig. 10). Neither reference teaches electrode connections formed of a section of a cylinder circumference extending at least 90° in the circumferential direction of the actuator body as required by the claims.

Since none of the applied references teaches each and every element of the claims, the claims are not anticipated by Hatschek, Angeloff or Maruyama et al.

Entry of the amendment and allowance of the claims are courteously solicited.

Respectfully submitted,

 Reg # 47339

For R.E.G.
Ronald E. Greigg
Attorney for Applicants
Registration No. 31,517

Date: August 13, 2003

GREIGG & GREIGG, P.L.L.C.
1423 Powhatan Street, Suite One
Alexandria, VA 22314
Tel. (703) 838-5500
Fax. (703) 838-5554

REG/JFG/cle